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Linkage Strategies, Industry Forces and University Performance

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Abstract

This study sought to contribute to knowledge by assessing the moderating effect of industry forces on the relationship between linkage strategies and performance of universities in Kenya. Porter's five forces model and Resource Based View (RBV) are the main theories anchoring the study. Cross-Sectional survey was adopted as the research design. The population of the study consists of sixtyfive (65) public and private universities incorporated in Kenya. Out of this, a sample of forty seven (47) universities which had undergone at least one graduation cycle was taken. Primary and secondary data was collected using semi-structured questionnaires and review of existing university documents and regulatory bodies websites respectively. The instrument was tested for reliability and found fit. Analysis was undertaken using correlation and regression analyses to test hypotheses. Analysis of variance was also used to determine the differences between group means. Coefficient of variation (C.V) was also used to measure variability and consistency in scores of different universities when standard deviation and arithmetic means are compared. Out of the targeted forty seven (47) respondents from forty seven (47) universities, a total of forty four (44) questionnaires were returned, representing 94% response rate. It was established that there is a moderating effect of industry forces on the relationship between linkage strategies and organizational performance. The results provided rich implications for theory, policy and practice. The significance of industry forces in strategy formulation and implementation requires concentrated attention. The findings offer insights to university authorities and policy makers by answering the question on the influence of industry forces on performance of higher learning institutions. The key recommendation that the study offers to the stakeholders, is the need to consider industry forces as critical determinants during strategy formulation and implementation process in order to enhance university performance. The main limitation of this study is that primary data was collected from only one respondent per university but common methods bias was mitigated through the use of additional secondary data to validate primary data. Thus, the limitation did not affect the credence of the results as presented and discussed. Secondly, although it was not possible to include all the determinants of institutional performance, balanced score card was appropriately used to represent financial and non-financial aspects that constitute performance indicators.

Key words: industry forces, linkage strategy, economic sector, university performance.

Introduction

Carefully formulated and appropriately executed strategy is generally expected to enhance organisational performance. However, the relationship between strategy and organisational performance is influenced by both internal resource conditions and industry forces. Industry forces are external factors to the firm that have market orientation and mainly focus on the product side. According to Porter (1985), the sources of value for the firm are embedded in the competitive situation characterizing its external product markets. In this perspective, a firm's sources of market power explain its relative performance. Porter (1980) advanced five forces model as favourable industry environmental analysis tool where competitive advantage is caused by industry forces arising from the structure of the market. Scholars in the field of strategic management have conceptualized industry forces as one of the key constructs for understanding organisational performance (Hofer and Schendel, 1978). The five forces include the threat of substitute products or services, the threat of established rivals, the threat of new entrants, the bargaining power of suppliers and the bargaining power of customers. In a typical university, the customers constitute the stakeholders who demand quality service at affordable price. The researcher considered suppliers who exercise their bargaining powers in public universities to include the parents, guardians, sponsors and schools that supply students as row materials to be processed into quality output at affordable price by the universities. Universities' financiers such as the government and other financial institutions demand quality services as well. According to Martin (2000), threat of entry for a university is often caused by alternative universities in the education industry competing on rapid changes in technology, price volatility and emerging market demands. Threat of substitution can be considered as other emerging alternative education such as e-learning, open learning methods and distance education that can be used as substitute by clients and lastly the rivalry among current competitors can be caused by both existing and upcoming private and public universities offering similar services. Mahdi et al. (2012) conducted a literature review of relationship between industry forces which they named as market orientation and performance among 61 articles within Asian sphere since 1995 to 2010. The survey showed an upward trend in studying industry forces and performance relationship among strategy researchers. The study also found some industry forces variables directly related to and at the same time moderators of performance within manufacturing and service industries. They concluded that in today's highly competitive global markets, managers strive to improve organizational effectiveness through identification of organizational strategies which linked to performance and that competitive industry influence is prominent subject that has emerged as a significant predictor of performance, and it is presumed to contribute to long term success. Sven et al. (2007) also conducted a cross-sectional sample survey of 530 hotels within Norwegian hotel industry. They established that industry forces have only a modest effect on relative productivity and no effect on return on assets and that the strongest effect of industry forces on performance was found when applying the subjective performance measures. Studies exploring linkages between higher education and industry have shown that having a strong symbiotic relationship between the two would enable the synergies to be exploited. This implies that performance of a higher learning institution should be measured in terms of quality of linkage it has with economic sector demands. The economic sector continually demands for relevant and competitive human resources from higher learning institutions (Ginies and Mazurelle, 2010). According to Eshiwani (1999), a university can only remain relevant if it

responds promptly to the changing technology and emerging economic sector demands, by formulating proper linkage strategies. Munyoki et al. (2011) noted that firms are reluctant to pay for new ideas, while universities tend to become too profit oriented as opposed to transferring the inventions to seek relationships with companies. The indicators of quality linkage strategies that foster relationships between economic sector and higher education were established by both Karanja (2011) and Chatterton and Goddard (2001) as curriculum orientation, enhanced industrial attachment, appropriate teaching and learning facilities and collaborative research. From the previous studies, curriculum orientation, industrial attachment focus, teaching and learning focus and collaborative research constitute key indicators of university-economic sector linkage strategies. Kaplan and Norton (2008) introduced balance scorecard which considers other non-financial measures of performance such as internal business process, learning and growth and customer perspective. The economic sector constitutes all the stakeholders who exert influence and with interest in the university education. It includes the business, agricultural and public sectors that consume university education by providing employment opportunities to university graduates. There have been attempts to examine the relationships among industry forces, strategy, and performance (Prescott, 1986). However, research examining that threefold relationship has not adequately addressed the issue of whether industry forces are separately and independently related to performance, moderators of the relationship between strategy and performance or some combination of the two.

Hypotheses of the Study

The following hypotheses are derived from the literature debate:

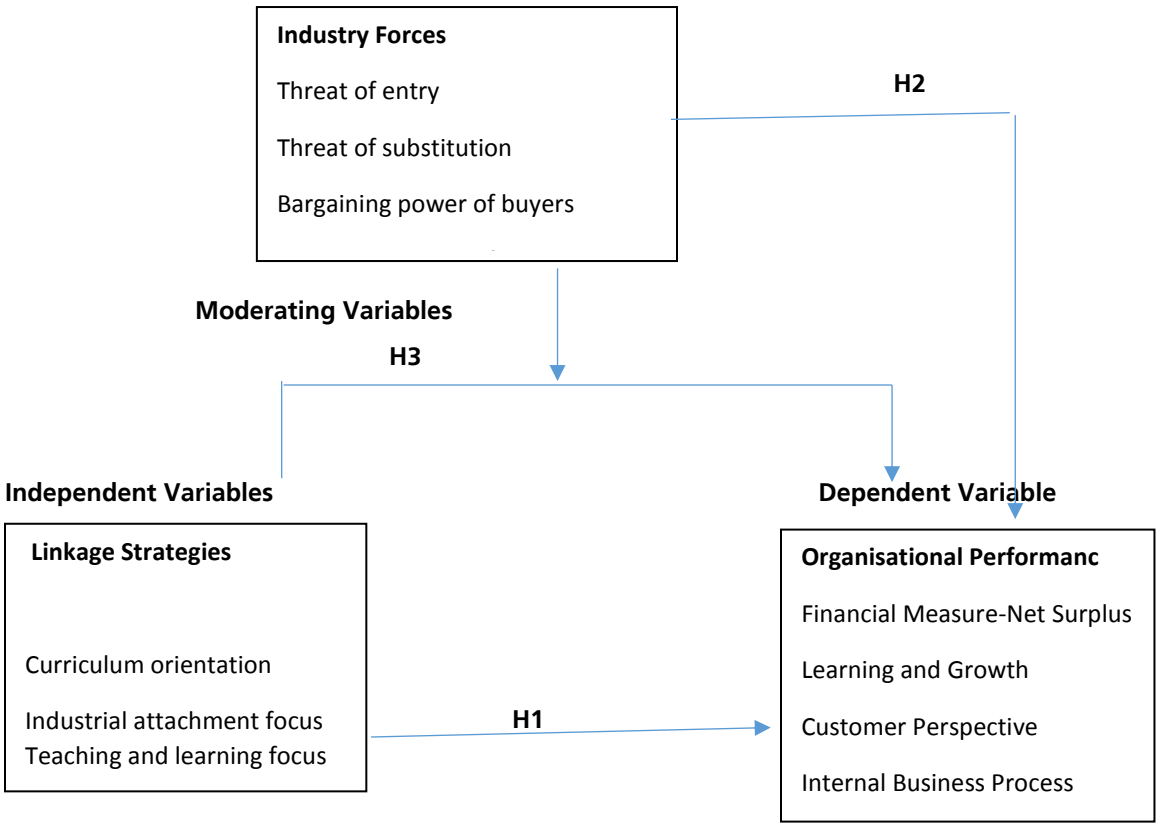
Hypothesis 1: There is significant relationship between linkage strategies and organisational performance.

Hypothesis 2: There is significant relationship between industry forces and organisational performance.

Hypothesis 3: There is moderating effect of industry forces on the relationship between linkage strategies and organisational performance.

Conceptual Framework

An integrated framework to respond to the knowledge gaps identified in the literature review in this study has been designed with two components. Linkage strategies constitute independent variables, industry forces constitute moderating variables and organisational performance constitutes dependent variable. The study determined the direct relationship between linkage strategies and organisational performance, direct relationship between Industry forces and organisational performance and its moderating effect.



Source: Author, 2014

Figure 1: Conceptual Model

Methods

The study adopted cross-sectional survey design. According to Irungu (2007), descriptive cross-sectional survey is appropriate where the overall objective is to establish whether significant associations among variables exist at some point in time. The cross-sectional approach involved collecting and comparing data from the phenomena as at the time of study. The combination of qualitative and quantitative data enabled adequate explanation of the variables and predictions in their behaviour without resorting into inquiries of the temporal effect. The design enhanced uniform data collection and comparison across respondents. Correlation analysis was used to check the nature and direction of relationships while regression analysis was used to establish mathematical models and test formulated hypotheses. ANOVA was also used to determine the differences between group means. As at the time of this study, there were a total of sixty five (65) universities operating in Kenya (Commission for University Education, 2013). Thus, population of this study comprises 65 public and private universities incorporated in Kenya.

From the 65, forty seven (47) universities which had undergone at least one (1) graduation cycle were sampled. Out of this, twenty two (22) were public and twenty five (25) were private universities. This sample size of 47 constitutes 72% of the population and it is way above the required 10% as a representative sample for a homogenous population. According to Kothari (2004), a population sample constituting 10% and above is appropriate if the researcher is dealing with a homogenous population.

Results

The primary and secondary data gathered were cleaned, coded, sorted, analyzed, interpreted and presented in different tables.

Correlation and Regression Analysis between Linkage Strategies and University Performance

Table .1: Correlations between Linkage Strategies and University Performance

		University Performance
University Performance	Pearson Correlation	1
	Sig. (2-tailed)	
	N	44
Curriculum Orientation	Pearson Correlation	.895**
	Sig. (2-tailed)	.000
	N	44
Industrial Attachment Focus	Pearson Correlation	.868**
	Sig. (2-tailed)	.000
	N	44
Teaching and Learning Focus	Pearson Correlation	.864**
	Sig. (2-tailed)	.000
	N	44
Collaborative Research	Pearson Correlation	.919**
	Sig. (2-tailed)	.000
	N	44
Linkage Strategies	Pearson Correlation	.979**
	Sig. (2-tailed)	.000
	N	44

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	Sig. (2-tailed)	.000
	N	44

**. Correlation is significant at the 0.05 level (2-tailed).

Source: Primary data, 2014

Correlation analysis was done after aggregating the variables as composite indices. When Pearson's product moment correlation coefficient (r) was computed, it was established that there exists high positive correlation between linkage strategies and university performance since r= 0.979, which is greater than 0.7. The correlation is significant at p value (0.000) < 0.05 as shown in Table 1.1. Correlation analysis between the indicators of linkage strategies and university performance shows that collaborative research has the highest positive correlation with university performance with Pearson's product moment correlation coefficient (r) = 0.919, which is greater than 0.7. This was followed by curriculum orientation, Industrial attachment focus and teaching and learning focus with r=0.895, 0.868 and 0.864 respectively. The correlation is significant at p value (0.000) < 0.05.

Table 1.2: Regression Summary and ANOVA on Linkage Strategies and Performance

	Standardised Coefficients		Sig.	R	R Square	F	Df	Sig.	Collinearity Statistics	
Regression	B	Std. Error		.940[a]	.883	73.531	4	.000[a]	Tolerance	VIF
Constant	.493	.220	.0312			Residual	39			
Curriculum Orientation	.041	.177	.0531						0.078	10.12
Industrial Attachment Focus	.121	.132	.0512						0.144	6.92
Teaching and Learning Focus	.125	.138	.0543						0.181	5.51
Collaborative Research	.451	.135	.0411						0.091	10.9

Regression model is significant at the 0.05 level (2-tailed).

Source: Primary data, 2014

Regression analysis was carried out to establish the equations for the models. To fix collinearity the stepwise method of model selection was used in order to include only the most useful variables in the models. Collinearity is indicated by tolerance close to zero (0) and variance inflation factor (VFI) greater than ten (10). Tolerance is the percentage of the variance in a given predictor that cannot be explained by the other predictors. A variance inflation factor greater than 10 is usually considered problematic. When each linkage strategy was regressed with university performance as shown in Table 1.2, collaborative research (R) was found the most significant predictor of university performance (Y_1) with p value (0.0411)< 0.05 followed by industrial attachment focus (I) with p value (0.0512) and then curriculum orientation (C) and teaching and learning focus (T) respectively(p values = 0.0531 and 0.543 respectively). The regression model relating each linkage strategy and university performance can be expressed as Y_1=0.49 +0.04C +0.13I + 0.12T + 0.45R. The model implies that a unit percentage increase in curriculum orientation would cause 0.04% increase in university performance, a unit percentage increase in industrial attachment focus would cause 0.13% increase in university performance, a unit percentage increase in teaching and learning focus would cause 0.12% increase in university performance and that a unit percentage increase in collaborative research would cause 0.45% increase in university performance. Table 1.2 shows that F (4, 39) = 73.531 and p value<0.001, tolerance values>0 and most VIF values < 10, thus the regression model is a valid relationship between linkage strategies and university performance. Consequently the first research hypothesis was accepted as follows:

Hypothesis 1: There is a significant relationship between linkage strategies and university performance.

Correlation and Regression Analyses on Industry Forces and Study Variables

Table 1.3 shows industry forces (X_2) has high negative correlation with university performance (Y) with r=-0.95>0.7 and correlation being significant at p value (0.000) < 0.05. High negative correlation was also established between

industry forces (X_3) and linkage strategies (X_1) with r=-0.958>0.7 and correlation being significant at p value (0.000) < 0.05.

Table 1.3: Correlations between Study Variables

		Y	X1	X2
Y	Pearson Correlation	1	.979**	-.947**
	Sig. (2-tailed)		.000	.000
	N	44	44	44
X_1	Pearson Correlation	.979**	1	-.958**
	Sig. (2-tailed)	.000		.000
	N	44	44	44
X_2	Pearson Correlation	.950**	.960**	-.968**
	Sig. (2-tailed)	.000	.000	.000
	N	44	44	44
X_3	Pearson Correlation	-.947**	-.958**	1
	Sig. (2-tailed)	.000	.000	
	N	44	44	44

**. Correlation is significant at 0.05 level (2-tailed).

Source: Primary data, 2014

When each of the indicators of industry forces were treated as independent variables and regressed with university performance, only threat of substitution (TS) and rivalry among current competitors (RCC) were found insignificant predictors of university performance (Y_2) with p values (0.653 and .879 respectively)> 0.05. Bargaining power of buyers (BPB), bargaining power of suppliers (BPS) and threat of entry (TE) were all found significant predictors of university performance with p values less than 0.05.

From Table 1.3, the regression model relating each industry force indicator and university performance can be expressed as Y_2=6.096-1.01BPB-2.52BPS-1.08TE-0.029TS-0.057RCC. The model implies that a unit percentage increase in bargaining power of buyers would cause 1.01% decrease in university performance (Y_2), a unit percentage increase in bargaining power of suppliers would cause 2.52% decrease in university performance (Y_2), a unit percentage increase in threat of entry would cause 1.08% decrease in university performance (Y_2), a unit percentage increase in threat of substitution would cause 0.029% decrease in university performance (Y_2), and finally, unit percentage increase in rivalry among current competitors would cause 0.057% decrease in university performance (Y_2).

Table 1.4: Regression and ANOVA on Industry Forces and Performance

	Standardised Coefficients		Sig.	R	R Square	F	df	Sig.	Collinearity Statistics	
Regression	B	Std. Error		.991a	.982	337.804	6	.000[a]	Tolerance	VIF
Constant	6.096	.082	.000			Residual	37			
Bargaining Power of Buyers	-1.012	.080	.000						.690	9.587
Bargaining Power of Suppliers	-2.52	.443	.000						.211	6.813
Threat of entry	-1.08	.140	.000						.172	5.460
Threat of Substitution	-.029	.083	.653						.003	16.371
Rivalry among Current Competitors	-.057	.399	.879						.002	56.987

Regression model is significant at the 0.05 level (2-tailed).

Source: Primary data, 2014

Table 1.4 shows that F (6, 37) = 337.804, p value (0.000) < 0.05, tolerance values>0 and all VIF values < 10 (apart from threat of substitution and rivalry among current competitors having VIF 16.371 and 56.987 respectively>10 and tolerance values 0.003 and 0.002 respectively close to zero). Thus the regression model relating industry forces and university performance is a valid relationship. The square of multiple correlations (R^2) =0.982 shows that industry forces explain 98.2% of variation when other variables in the conceptual model (Fig. 1) are constant. Consequently the second hypothesis was accepted as follows: ***Hypothesis 2: There is a significant relationship between industry forces and university performance.***

To test hypothesis 3, that there is a moderating effect of industry forces on the relationship between linkage strategies and organizational performance, a hierarchical multiple regression analysis was conducted. Linkage strategies and industry forces were Centered and an interaction term (X_1*X_3) between them was created and then added to the regression model. This accounted for a small proportion of the variance in university performance caused by moderating effect of industry forces. As shown in Table 1.5, the change in squared multiple correlation coefficient (ΔR^2) = 0 .002 which is not significantly greater than zero since p value (0.426) >0.05. This shows that industry forces explain additional 0.2% variation in university performance. Further, ΔF (1, 40) = 0.648, p value (0.426) > 0.05 shows insignificant variation in the model fit.

Table 1.5: Model Summary and the Change Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.924[a]	.855	.847	.43325	.855	120.436	2	41	.000
3	.926[b]	.857	.846	.43512	.002	.648	1	40	.426

Regression model is significant at the 0.05 level (2-tailed).

Source: Primary data, 2014

Although insignificant, there is still some moderating effect of industry forces on the relationship between linkage strategies and university performance. Hypothesis 3 was therefore accepted as follows: ***Hypothesis 3: There is a moderating effect of industry forces on the relationship between linkage strategies and organizational performance.***

Conclusion

The findings of this study reaffirm that strategies fused with linkage components enhance organisational performance. Therefore, when organisational strategies do not reflect linkage aspects in reference to the economic sector it serves, performance becomes weak. Findings of this study demonstrate that industry forces are strong predictor of organisational performance. However they cause a small moderating effect on the relationship between linkage strategies and university performance. It is clear from the findings that universities can only remain relevant if they respond promptly to the changing technology and new economic sector demands, by formulating proper linkage strategies and embrace the effect of industry forces in order to counter competition and strive to attain and maintain a competitive edge over the rivals in all areas of operation. Embracing healthy competition would lead to improved resource conditions, involvement of stakeholders in decision making process and reduction of destructive competitive forces within education sector as an industry.

Implication of the Study

The study findings have theoretical, practical and policy implications for future researchers, university authorities and all stakeholders. Resource-based view (RBV) and five forces model as the main theories anchoring the study provides a favourable model for analysing the appropriate strategies that can provide effective university education-economic sector linkages. The regression model linking strategies and university performance demonstrates that authorities in higher learning institutions can apply the models in predicting performance of their institutions. RBV provides the frame work within which the linkage strategies can be identified from the internal firm resources. It is clear from the findings that industry linkage components must be fussed in the strategies in order to realise

superior organisational performance. The study findings clearly define the influence of industry forces in explaining firm performance. Porter (1981) observed that most scholars attribute firm performance to competitive forces within and without the firm and therefore, it has been difficult to distinguish their relative roles. This study bridges this gap by establishing mathematical models to explain separate and moderating effect of industry forces on organisational performance and its link with linkage strategy. For practice, the study highlights the most significant components of strategy that impact on university performance. Curriculum orientation, industrial attachment, teaching and learning focus and collaborative research have been established as significant predictors of university performance. The university authorities must therefore strategically link these indicators to the industry by involving stakeholders in strategy formulation and implementation process, in order to realise superior performance. Similarly, for universities to attain and maintain competitive advantage, they have to reduce industry competitive forces and threats so that they exhibit monopoly-like characteristics. Findings indicate that threat of new entry is the most significant indicator of industry forces. In the recent past, universities in Kenya have been undergoing quite substantial transformation with a number of constituent university colleges converting to autonomous and fully fledged universities. The number of private universities has also been on the increase. This has caused unavoidable competition and changing market positioning in the education sector as an industry. Policies that mitigate intense competition should revolve around the five forces model so as to reduce the high industry threats and powers in order to attain monopoly-like characteristics. This would consequently enhance organisational performance. Future research could focus on the relative roles of both industry forces and resource conditions in influencing the relationship between linkage strategy and organisational performance. This study mainly dwelt on the role of industry forces. It would also be interesting to test these convergent findings in a relatively stable environment.

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